

Molecular Ecology – Bio 3444A

Course Outline

1. Course Outline

Course Information

Molecular Ecology (Biology 3444A) consists of in-person lectures and tutorial labs to cover

List of Prerequisites

Biology 2483A/B (Ecology), Biology 2581A/B (Genetics)

Unless you have either the prerequisites for this course or written special permission from the Department of Biology to enroll in it, you may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on your academic record. This decision may not be appealed.

2. Instructor and TA Information

Instructor	Email	Office	Office Hours
Zach Balzer (he/him)	zbalzer@uwo.ca		By appointment only*
Teaching Assistant	Email	Tutorial Location	Office Hours
			During tutorial

Students must use their Western (@uwo.ca) email addresses when contacting the instructor and TAs. Emails originating from other email addresses will not be responded to.

*Office hours can be held in person or via Zoom.

I will answer questions about course content up until 24 hours prior to exams. Your TA will not have office hours. Any questions pertaining to grades should be directed to the person who graded the assignment. Please be aware that questions regarding grades should be sent via email, and at least 24 hours after the grades have been released.

3. Course Syllabus, Schedule, Delivery Mode

Goals of the Course

An introduction to the use of molecular tools, particularly genetic tools, in addressing both basic and applied questions in ecological research. We will consider the use of molecular tools for addressing questions in population, behavioural, community, and ecosystem ecology. We will also consider various areas of practical application such as species conservation, studies of the origin and spread of invasive species, wildlife forensics, and agriculture and fisheries. Lectures and student-led seminars will develop basic knowledge and theory underlying molecular ecology, and will present recent case studies from the primary literature.

Lab session schedule:

Week of	Lecture	Tutorial	Assessment
Sept 8	Introduction	What is a research proposal?	Partner Registration
Sept 15	Molecular Markers	Choosing a molecular marker	Tutorial Assignment 1
Sept 22	Single Population Analyses	Annotated Literature Review	Annotated Literature Review due
Sept 29	No Lecture – Truth and Reconciliation Day	No Tutorial	
Oct 6	*Identification	Identifying an Individual	Tutorial Assignment 2
Oct 13	Midterm in class – no lab		
Oct 20	Multiple Population Analyses	Parental Assignment	Tutorial Assignment 3
Oct 27	Community & Ecosystem Ecology		
Nov 3	Reading Week – no lab		
Nov 10	Phylogeography	How to Peer Review	Research Proposal due
Nov 17	Behavioural Ecology	Optional peer review session	
Nov 24	Conservation Genetics	No Tutorial	Peer Review due
Dec 1	Guest Lecture	No Tutorial	
Dec 8	Review	No Tutorial	

*The lecture during the week of October 6 will be done remotely, over Zoom

Key Sessional Dates for Fall Term:

Classes begin: September 4, 2025

Midterm Exam: October 14, 2025

Fall Reading Week: November 3 – 9, 2025

Classes end: December 9, 2025

Final exam period: December 11 – 22, 2025

4. Course Materials

Required Textbook: Joanna R. Freeland, *Molecular Ecology*, 3rd Edition, Wiley Blackwell, 2020. Hardcopy textbooks (\$88.70) will be available through the BookStore website:

- https://bookstore.uwo.ca/search/products?search=molecular%20ecology&sort=search_ap_i_relevance%20DESC
- Students need to purchase this edition. Second-hand or older editions will not be sufficient

All other course material will be posted to OWL: <https://westernu.brightspace.com/>

- Course Policies: All course materials, assignments, and exams posted on Brightspace or presented are the intellectual property of your instructor and course and for your personal use only. Audio and/or visual recording is not permitted (unless otherwise allowed by the instructor) and should not be shared.

Students are responsible for checking the course OWL site (<https://westernu.brightspace.com/>) regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class.

If students need assistance with the course OWL site, they can seek support on the OWL Brightspace Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

Technical Requirements:

This course requires the following:

- Laptop or computer
- Microsoft Office Excel and Word
- Non-programmable calculator

5. Methods of Evaluation

Lab Assignments (due dates and submission)

Tutorial Assignments (3)	15% (5% each)
Midterm	20% October 14, in-class
Literature Review	15%, due September 26 by 11:59pm
Proposal	15%, due November 14 by 11:59pm – written in PAIRS
Peer Review	5% due by November 28 by 11:59pm
Final Exam	30%, TBD – scheduled by the registrar

Midterm Dates

- Midterm: October 14 from 10:30am – 12:30pm (in class)
- Makeup: October 15 (Room and time TBA)

Use of Generative AI Tools

Use of generative AI tools are permitted with limitations for each assessment. Such AI tools can be used for checking grammar only. Assignments written by AI tools will be penalized.

Essential Learning Requirements

Even when Academic Considerations are granted for missed coursework, the following are deemed essential to earn a passing grade.

- The final exam must be completed. A makeup exam shall be arranged upon formal academic consideration being granted
- Students must obtain a minimum of 50% or higher on lab assignments to demonstrate sufficient mastery of those technical skills to progress.
- Students must obtain a minimum of 50% or higher on the final exam to demonstrate mastery of the contents and pass the course.

Evaluation Scheme for Late Lab Assignments

Late assignments (without accommodation) will be accepted for one week following the due date. The late assignment will be deducted 10% per day thereafter. Late assignments with approved academic consideration will not be penalized during the period approved.

General information about missed coursework

Students must familiarize themselves with the University Policy on Academic Consideration – Undergraduate Students in First Entry Programs posted on the Academic Calendar:
https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf,

This policy does not apply to requests for Academic Consideration submitted **for attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult [Accessible Education](#).

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage:
https://registrar.uwo.ca/academics/academic_considerations/

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All Academic Consideration requests normally must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request **without supporting documentation** in this course. However, the following assessments are excluded from this, and therefore always require formal supporting documentation:

- Examinations scheduled during official examination periods (Defined by policy)
- Midterm (Designated by the instructor as the one assessment that always requires documentation when requesting Academic Consideration)

When a student *mistakenly* submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

Evaluation Scheme for Missed Assessments

- All **Lab Assignments** are due by the deadline established and indicated on Brightspace. Late penalties are applied as explained above (see “Evaluation Scheme for Late Lab Assignments”). If one assignment is missed, this shall be counted towards another assignment with the highest mark (see “Coursework with Assessment Flexibility”). Students that miss more than one assignment and obtain Academic Considerations will be able to submit the assignment at a later date.
- If a student misses the **Midterm Exam** and has academic accommodation, a makeup exam will be held on another date. If the student cannot attend the makeup exam before the release of answers, their final exam will be reweighted to include the missed Midterm.
- When a student misses the **Final Exam** and their Academic Consideration has been granted, they will be allowed to write the Special Examination (the name given by the University to a makeup Final Exam). See the Academic Calendar for details (under [Special Examinations](#)), especially for those who miss multiple final exams within one examination period.

Coursework with Assessment Flexibility

By policy, instructors may deny Academic Consideration requests for the following assessments with built-in flexibility:

Flexible Completion

Lab Assignments. This course has six assignments, all counted towards your final grade. Students are expected to submit each of the assignments by the deadline listed. Should extenuating circumstances arise, students do not need to request Academic Consideration and they are permitted to submit their assignment up to 48 hours past the deadline without a late penalty. Should students submit their assessment beyond 48 hours past the deadline, a late penalty of 10% per day will be applied.

6. Additional Statements

Religious Accommodation

When conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible but not later than two weeks prior to the writing or the examination (or one week prior to the writing of the test).

Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays:

<https://www.edi.uwo.ca>.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_disabilities.pdf

Academic Policies

The website for Registrar Services is: <https://www.registrar.uwo.ca/>.

In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf,

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

You may use a non-programmable calculator for the midterm and final exam.

Scholastic offences

Policy on Scholastic Offences:

https://uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_offences.pdf

Procedures on Scholastic Offences (Undergraduate):

https://uwo.ca/univsec/pdf/academic_policies/appeals/undergrad_scholastic_offtend_procedure.pdf

Use of Electronic Devices During Assessments

In courses offered by the Faculty of Science, the possession of unauthorized electronic devices during any in-person assessment (such as tests, midterms, and final examinations) is strictly prohibited. This includes, but is not limited to: mobile phones, smart watches, smart glasses, and wireless earbuds or headphones.

Unless explicitly stated otherwise in advance by the instructor, the presence of any such device at your desk, on your person, or within reach during an assessment will be treated as a scholastic offence, even if the device is not in use.

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is your responsibility to review and comply with these expectations.

Use of Generative AI tools

Unless otherwise stated, the use of generative AI tools (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) is not permitted in the completion of any course assessments, including but not limited to: assignments, lab reports, presentations, tests, and final examinations.

Using such tools for content generation, code writing, problem solving, translation, or summarization—when not explicitly allowed—will be treated as a scholastic offence.

If the use of generative AI is permitted for a particular assessment, the conditions of use will be specified by the instructor in advance. If no such permission is granted, students must assume that use is prohibited. It is your responsibility to seek clarification before using any AI tools in academic work.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Support Services

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic-related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at:

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at

http://academicsupport.uwo.ca/accessible_education/index.html

if you have any questions regarding accommodations.

Learning-skills counsellors at Learning Development and Success (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.